

WHAT IS CLAIMED IS:

5 1. A warehousing system for palletized cargo, said system comprising:
a feed conveyer for bringing palletized cargo to or from said system;
a plurality of storage racks for storing said palletized cargo;
a loading/unloading conveyer for bringing said palletized cargo from or to at least
one loading/unloading dock;

10 a traveling conveyer for carrying individual loads of said palletized cargo; and
means for selectively moving said traveling conveyer between:
 (i) a location in which said traveling conveyer is aligned with said feed
conveyer for receiving or discharging said palletized cargo to or from said feed
conveyer;

15 (ii) locations in which said traveling conveyor is aligned with said
storage racks for receiving or discharging said palletized cargo from or to said
storage racks; and

20 (iii) a location in which said traveling conveyor is aligned with said
loading/unloading conveyor for receiving or discharging said palletized cargo
from or to said loading/unloading conveyor.

25 2. The warehousing system of claim 1, wherein said storage racks are stacked in tiers
at a plurality of elevations.

30 3. The warehousing system of claim 2, wherein said traveling conveyor comprises:
a conveyor deck for holding loads of said palletized cargo; and
means for elevating said conveyor deck to heights level with said storage
racks in said stacked tiers.

35 4. The warehousing system of claim 3, wherein said means for elevating said
conveyor deck comprises:

5 a scissor-jack mechanism mounted to said conveyor deck for selectively raising and lowering said conveyor deck to said heights level with said storage racks.

5. The warehousing system of claim 3, wherein said means for selectively moving said traveling conveyor comprises:

10 a wheeled chassis having said conveyor deck mounted thereon; and
at least one track for guiding said wheeled chassis between said locations in which said palletized cargo is received or discharged.

6. The warehousing system of claim 1, wherein said feed conveyor further
15 comprises:

a branch portion that diverges from a main portion of said feed conveyor, for bringing said cargo directly to or from said loading/unloading conveyor without passing to said traveling conveyor.

20 7. The warehousing system of claim 6, wherein said feed conveyor further comprises:

means for selectively diverting said palletized cargo from said main portion of said feed conveyor onto said branch portion of said conveyor.

25 8. The warehousing system of claim 7, wherein said means for selectively diverting said palletized cargo onto said branch portion of said feed conveyor comprises:

a sweep arm pivotally mounted proximate a junction of said main and branch portions of said feed conveyor; and

30 means for selectively extending said sweep arm from a retracted position in which said palletized cargo is permitted to pass along said main portion to said traveling conveyor, to an extended position in which said sweep arm redirects said cargo along said branch portion of said feed conveyor.

5 9. The warehousing system of claim 6, wherein said branch portion of said feed conveyor comprises:

10 a bypass segment connecting said branch portion of said feed conveyor and said loading/unloading conveyor; and

15 means for displacing said bypass segment so as to form a gap between said branch portion of said feed conveyor and said loading/unloading conveyor, for receiving said traveling conveyor therein when said traveling conveyor is in said location for receiving or discharging said palletized cargo from or to said loading/unloading conveyor.

10 10. The warehousing system of claim 1, wherein said at least one loading/unloading dock is an automated cargo loading/unloading system comprising:

15 a rigid, extensible dock member having an upper surface for supporting a load of palletized cargo;

20 means for extending said dock member into an interior of a transport vehicle so as to carry said load of palletized cargo into or out of said transport vehicle en masse; and

25 means for selectively restraining said load of palletized cargo within said interior of said vehicle as said extensible dock member is withdrawn therefrom.

11. The warehousing system of claim 10, wherein said extensible dock member comprises:

25 a beveled leading edge for sliding under a load of palletized cargo within said interior of said transport vehicle as said dock member is extended therein.

12. The warehousing system of claim 10, wherein said automated cargo loading/unloading system further comprises:

30 means for selectively transferring said palletized cargo from said loading/unloading conveyor to said extensible dock member.

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• 5 13. The warehousing system of claim 12, wherein said means for selectively transferring said palletized cargo from said loading/unloading conveyor to said extensible dock member comprises:

 a push plate positioned proximate an inner end of said extensible dock member and on an opposite side of said loading/unloading conveyor therefrom; and

10 means for selectively extending said push plate so as to push said palletized cargo off of said loading/unloading conveyor and onto said inner end of said extensible dock member.

14. The warehousing system of claim 10, wherein said automated cargo
15 loading/unloading system further comprises:

 means for selectively transferring said palletized cargo from said extensible dock member to said loading/unloading conveyor.

15. The warehousing system of claim 14, wherein said means for selectively
20 transferring said palletized cargo from said extensible deck member to said loading/unloading conveyor comprises:

 an unloading paddle mounted to said extensible dock member;

25 means for selectively moving said unloading paddle from a retracted position in which said unloading paddle is positioned beneath an upper surface of said extensible dock member, to a deployed position in which said unloading paddle projects above said upper surface of said extensible dock member proximate an outer end of said dock member; and

30 means for translating said unloading paddle in said deployed position from said outer end of said extensible dock member to proximate an inner end of said deck member, so as to push said palletized cargo off of said extensible dock member and onto said loading/unloading conveyor at said inner end of said dock member.

16. An automated cargo loading/unloading system, comprising:

5 a rigid, extensible dock member having an upper surface for supporting a load of palletized cargo;

means for extending said dock member into an interior of a transport vehicle so as to carry said load of palletized cargo into or out of said transport vehicle en masse; and

10 means for selectively restraining said load of palletized cargo within said interior of said vehicle as said extensible dock member is withdrawn therefrom.

17. The automated cargo loading/unloading system of claim 16, wherein said extensible dock member comprises:

15 a beveled leading edge for sliding under a load of palletized cargo within said interior of said transport vehicle as said dock member is extended therein.

18. The automated cargo loading/unloading system of claim 16, further comprising:

means for selectively transferring said palletized cargo from said loading/unloading conveyor to said extensible dock member.

20 19. The automated cargo loading/unloading system of claim 18, wherein said means for selectively transferring palletized cargo from said loading/unloading conveyor comprises:

a push plate positioned proximate an inner end of said extensible dock member and on an opposite side of said loading/unloading conveyor therefrom; and

25 means for selectively extending said push plate so as to push said palletized cargo off of said loading/unloading conveyor and onto said inner end of said extensible dock member.

20. The automated cargo loading/unloading system of claim 16, further comprising:

30 means for selectively transferring said palletized cargo from said extensible dock member to said loading/unloading conveyor.

• 5 21. The automated cargo loading/unloading system of claim 19, wherein said means for selectively transferring said palletized cargo from said extensible dock member to said loading/unloading conveyor comprises:

an unloading paddle mounted to said extensible dock member;

10 means for selectively moving said unloading paddle from a retracted position in which said unloading paddle is positioned beneath an upper surface of said extensible dock member, to a deployed position in which said unloading paddle projects above said upper surface of said extensible dock member proximate an outer end of said dock member; and

15 means for translating said unloading paddle in said deployed position from said outer end of said extensible dock member to proximate an inner end of said deck member, so as to push said palletized cargo off of said extensible dock member and onto said loading/unloading conveyor at said inner end of said dock member.

22. The automated cargo loading/unloading system of claim 17, wherein said extensible dock member comprises:

20 a thin, rigid plate member.

23. The automated cargo loading/unloading system of claim 21, wherein said means for extending said dock member comprises:

25 drive means mounted to an inner end of said rigid plate member for translating said plate member into and out of said interior of a transport vehicle.

24. The automated cargo loading/unloading system of claim 22, wherein said extensible dock member further comprises:

30 a plurality of rollers mounted to said rigid plate member and protruding slightly above an upper surface thereof for enabling said palletized cargo to move longitudinally along said plate member.

5 25. The automated cargo loading/unloading system of claim 23, wherein said rollers are located at spaced distances from inner and outer ends of said rigid plate member, so as to form dead spots on said upper surface of said plate member for frictionally arresting longitudinal movement of said palletized cargo proximate said inner and outer ends thereof.

10 26. The automated cargo loading/unloading system of claim 24, wherein said extensible dock member further comprises:

 a plurality of ball bearing members mounted in said beveled outer end of said dock member and protruding slightly above an upper surface thereof for facilitating penetration of said beveled edge under said palletized cargo in a transport vehicle.

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